

Geolocation Accuracy Performance of the DigitalGlobe Constellation During 2015

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DigitalGlobe

Introduction

- This presentation collects together geolocation accuracy performance assessments for the DigitalGlobe satellite constellation from imagery collected during 2015.
- The satellites have been performing well and provided good geolocation accuracy performance for 2015.
- CE90 and LE90 estimation is based on the Percentile Method
 - Recommended by NIQU/CCAP
 - Bresnahan, P., Absolute Geolocation Accuracy Evaluation of Worldview-1 Basic 1B Stereo Pairs, JACIE 2010
 - Bresnahan, P., Absolute Geolocation Accuracy Evaluation of GeoEye-1 Basic Stereo Triplets, JACIE 2010

DigitalGlobe Constellation Horizontal Accuracy for 2015

Satellite	Mono		
	# images	CE90 (m)	RMSE (m)
WorldView-1	719	4.5	3.0
WorldView-2	718	4.6	3.0
WorldView-3	1796	3.6	2.4
GeoEye-1	129	4.4	3.0

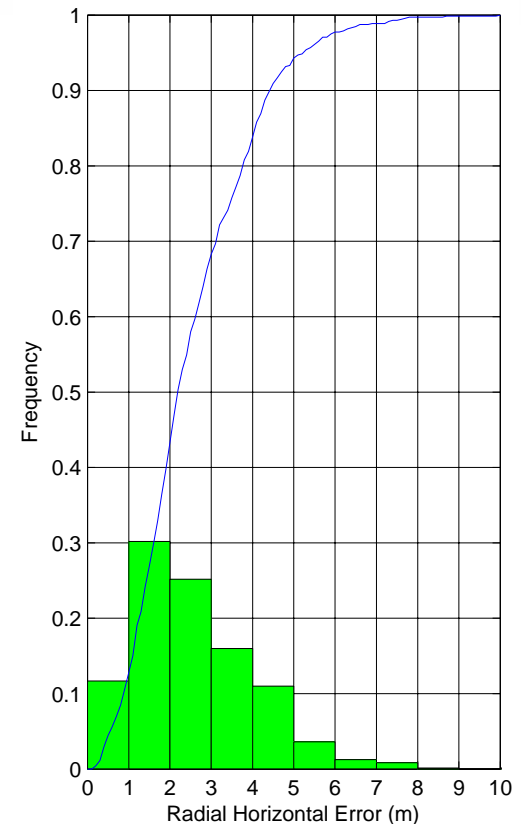
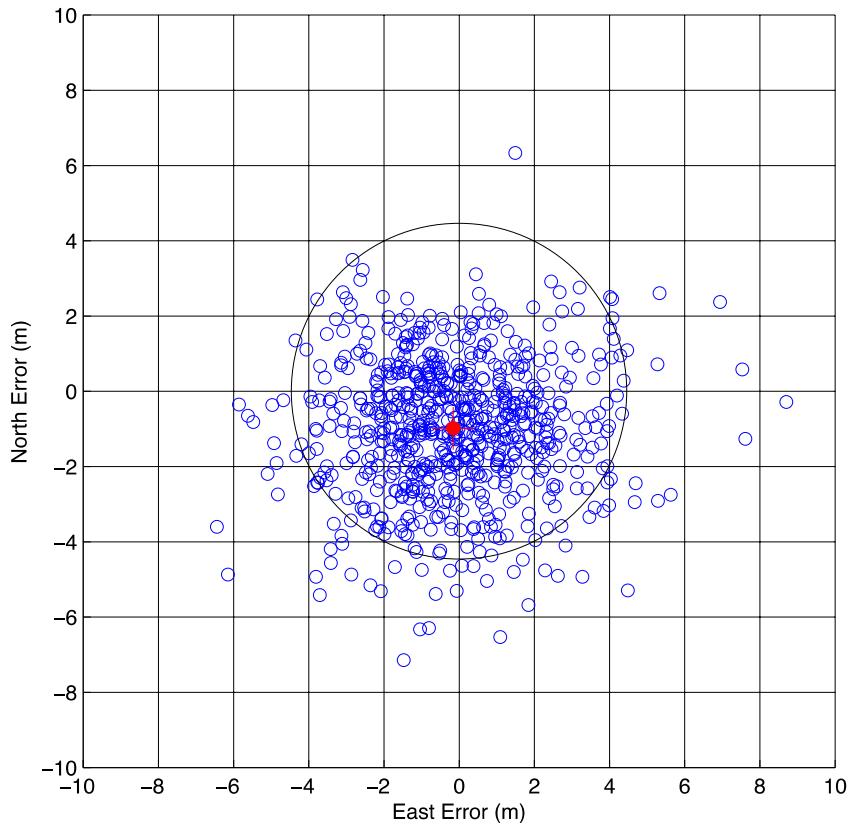
WorldView-1 Horizontal Accuracy: Statistics

N = 719 images

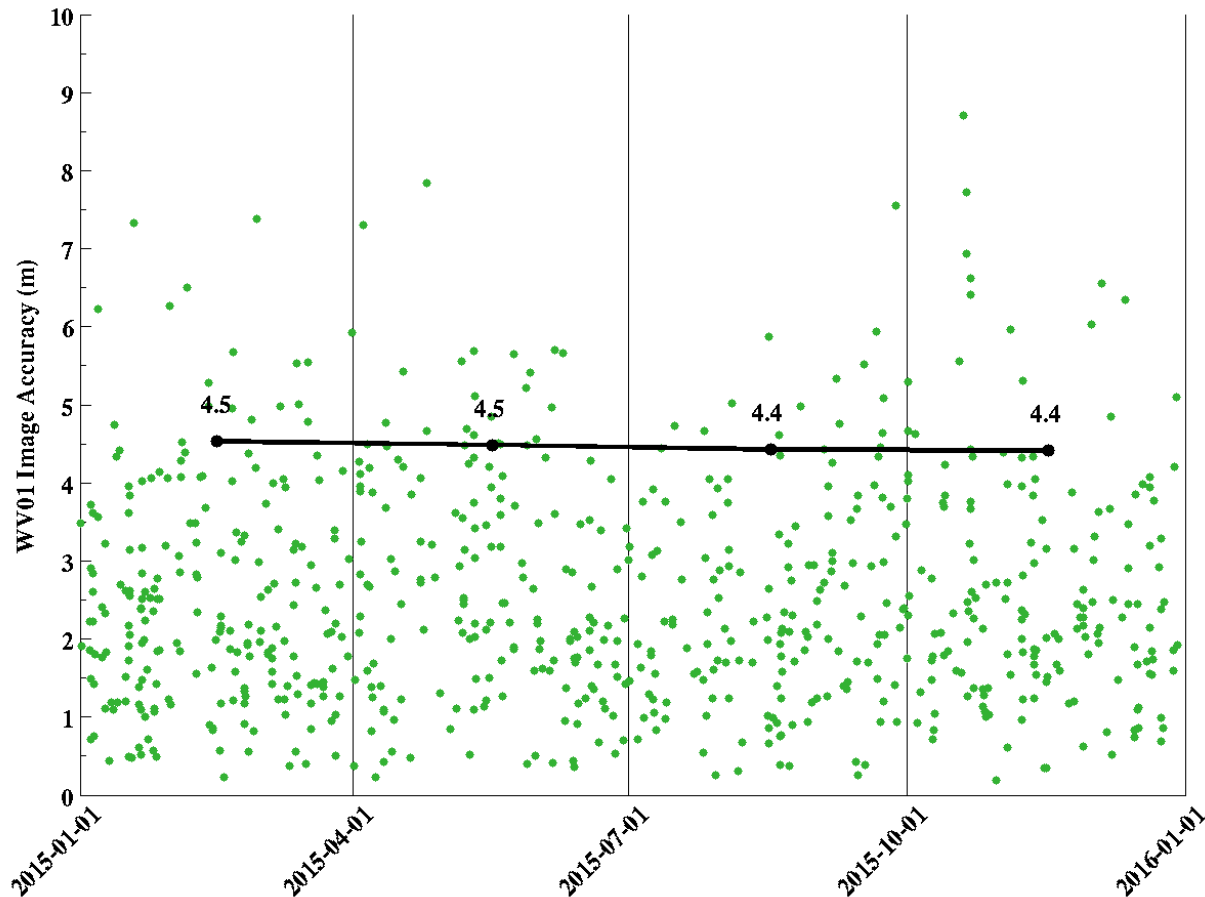
Avg(East) = -0.2 m Avg(North) = -1.0 m

CE90 = 4.5 m

RMSE = 3.0 m



WorldView-1 Horizontal Accuracy: Time Series



Each green dot is the mean radial accuracy of a test image measured in the geodetic frame.

Each black dot is the measured CE90 accuracy for the quarter shown.

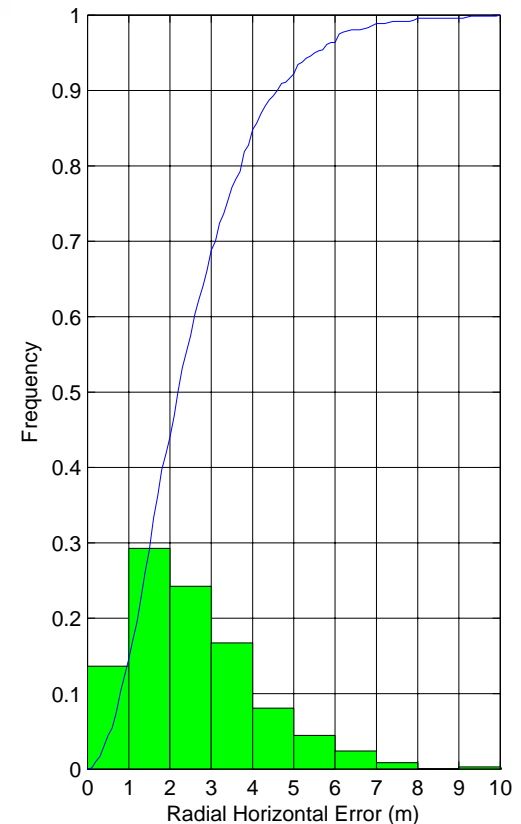
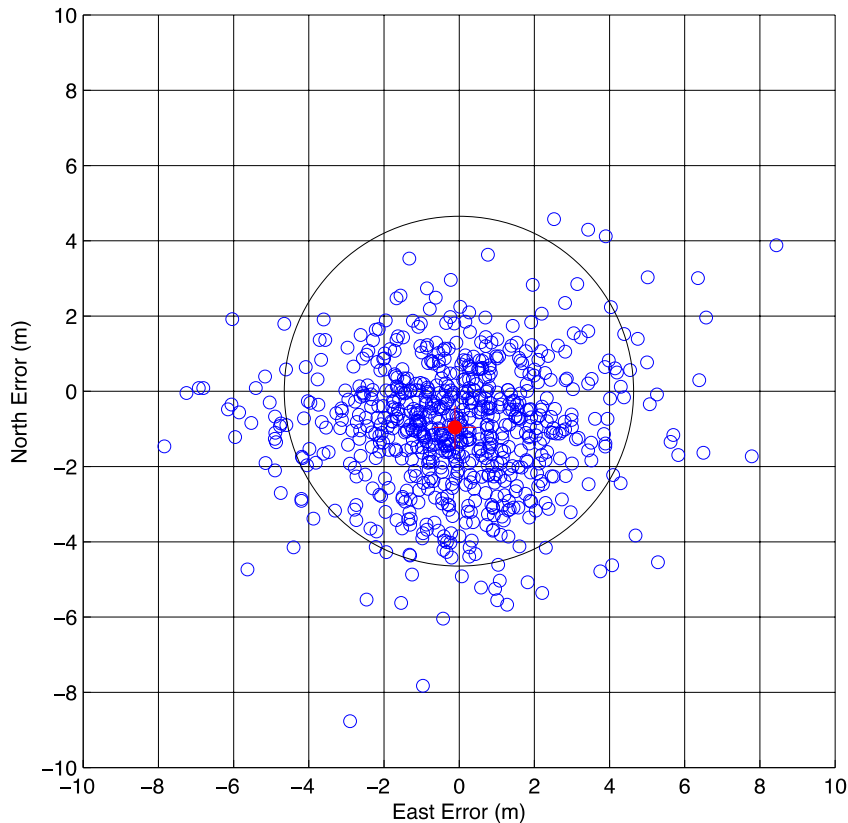
WorldView-2 Horizontal Accuracy: Statistics

N = 718 images

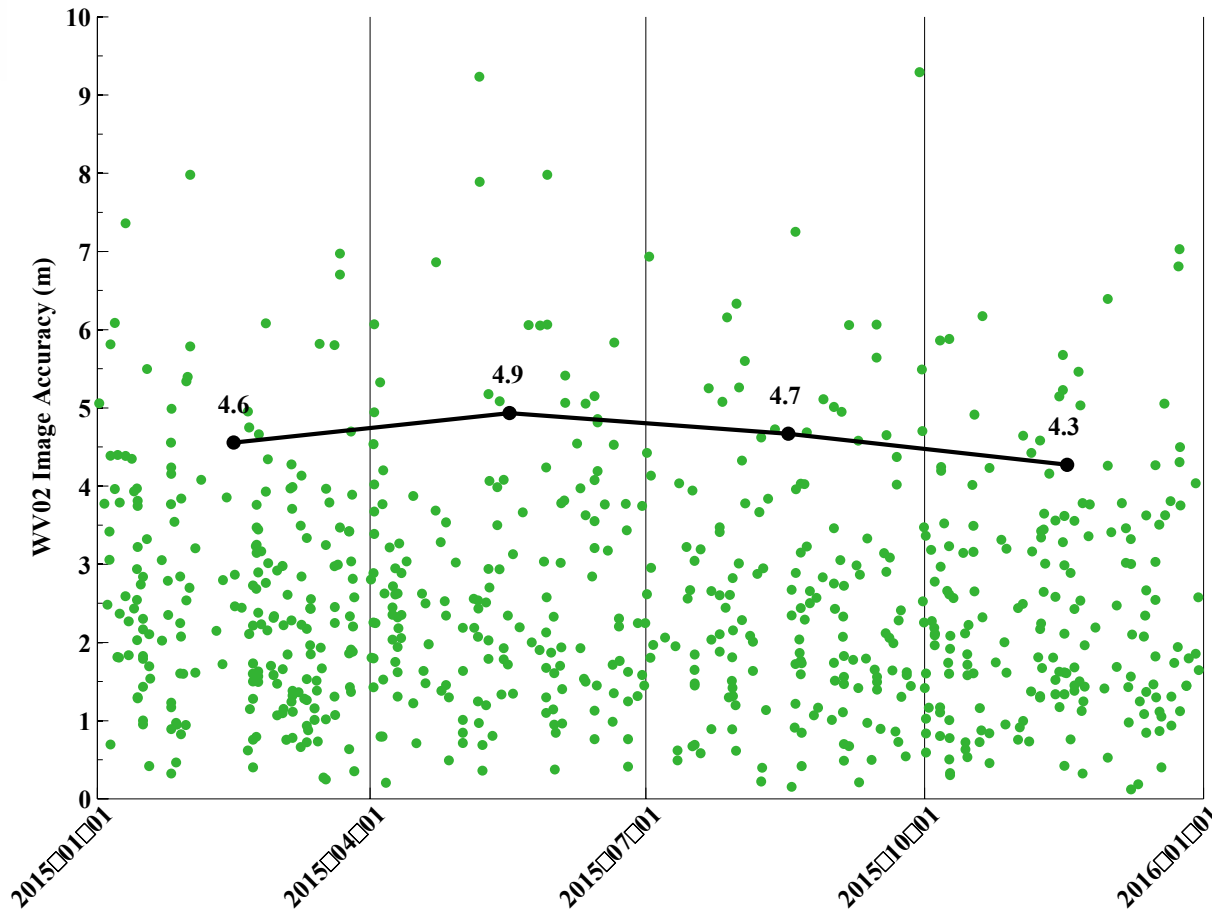
Avg(East) = -0.1 m Avg(North) = -1.0 m

CE90 = 4.6 m

RMSE = 3.0 m



WorldView-2 Horizontal Accuracy: Time Series



Each green dot is the mean radial accuracy of a test image measured in the geodetic frame.

Each black dot is the measured CE90 accuracy for the quarter shown.

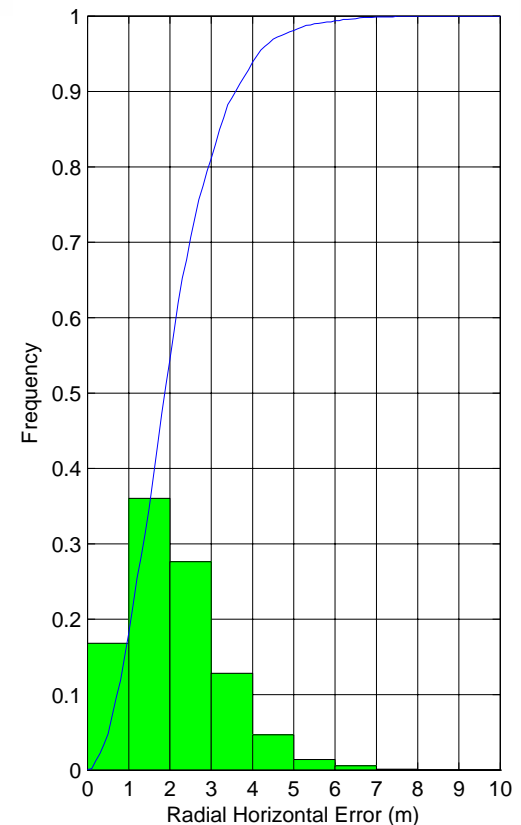
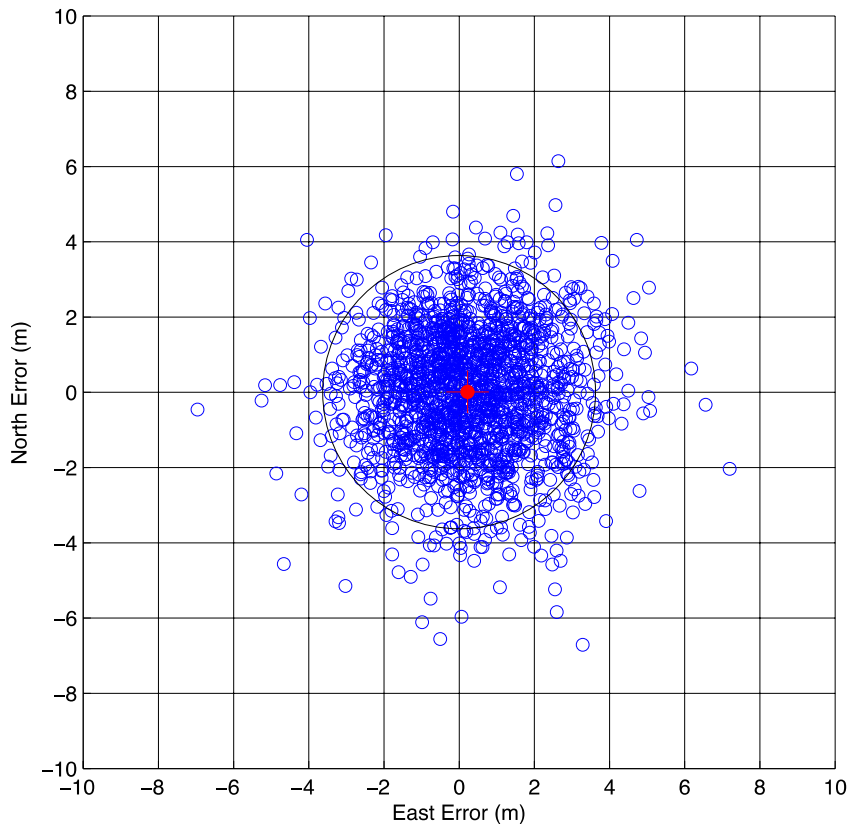
WorldView-3 Horizontal Accuracy: Statistics

N = 1796 images

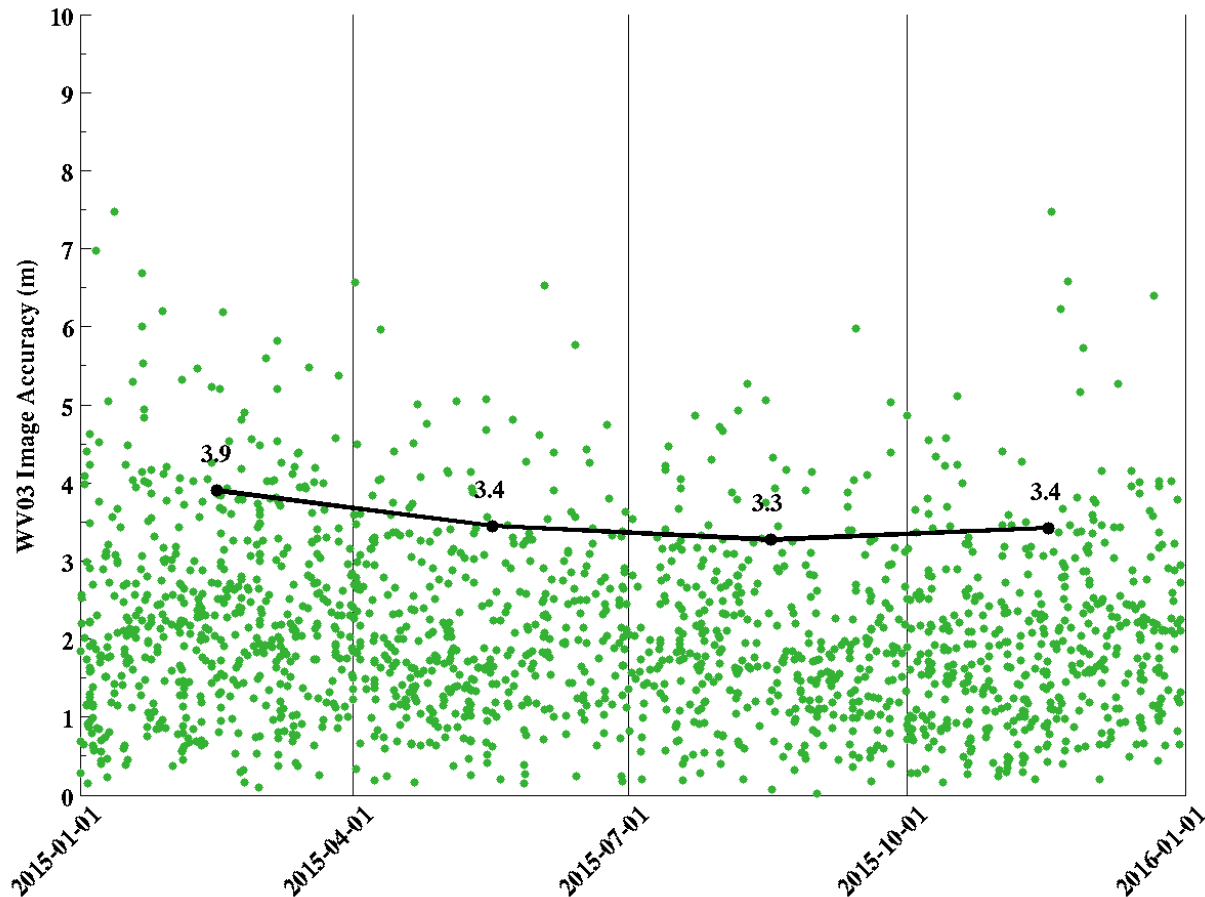
Avg(East) = 0.2 m Avg(North) = 0.0 m

CE90 = 3.6 m

RMSE = 2.4 m



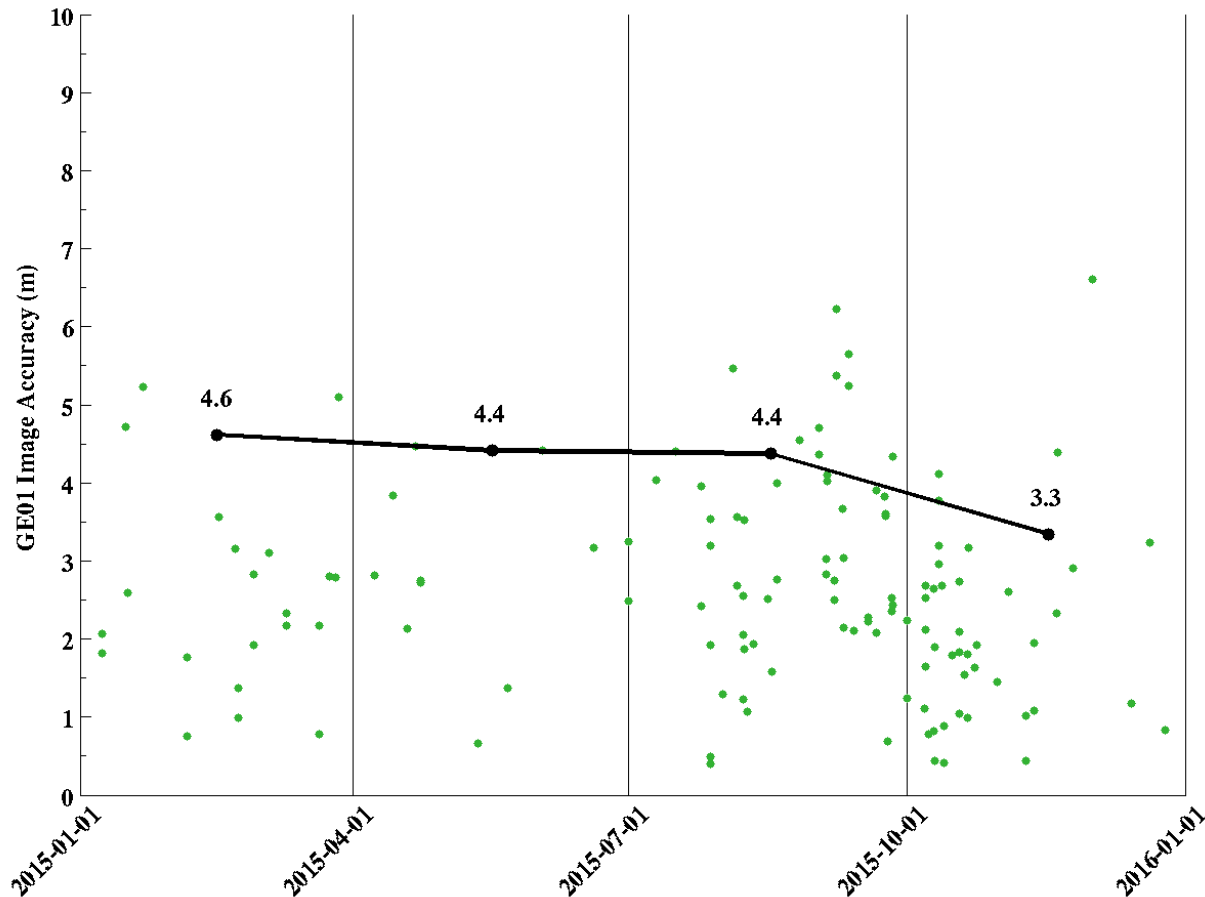
WorldView-3 Horizontal Accuracy: Time Series



Each green dot is the mean radial accuracy of a test image measured in the geodetic frame.

Each black dot is the measured CE90 accuracy for the quarter shown.

GeoEye-1 Horizontal Accuracy: Time Series



Each green dot is the mean radial accuracy of a test image measured in the geodetic frame.

Each black dot is the measured CE90 accuracy for the quarter shown.

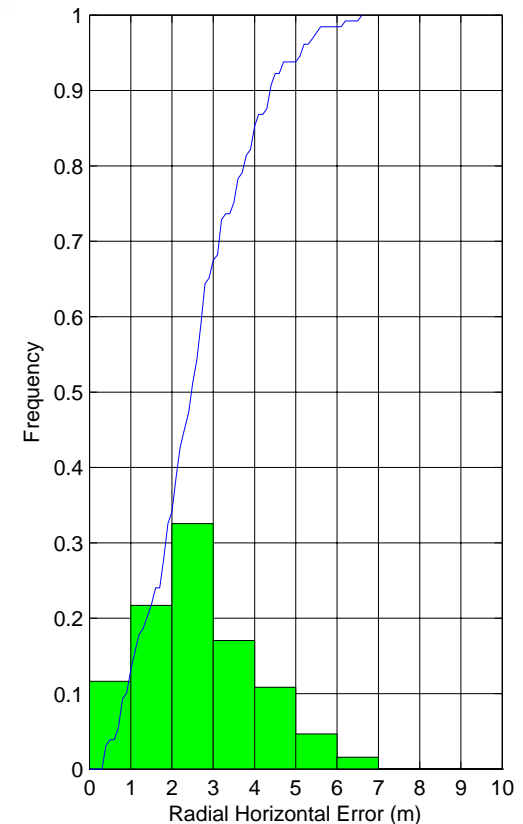
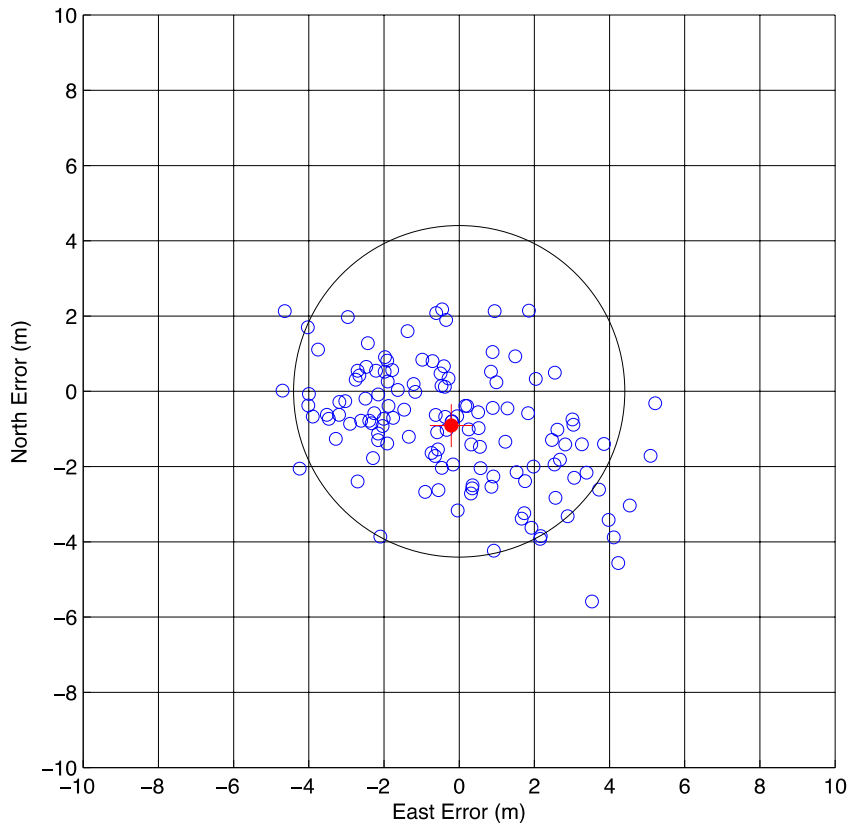
GeoEye-1 Horizontal Accuracy: Statistics

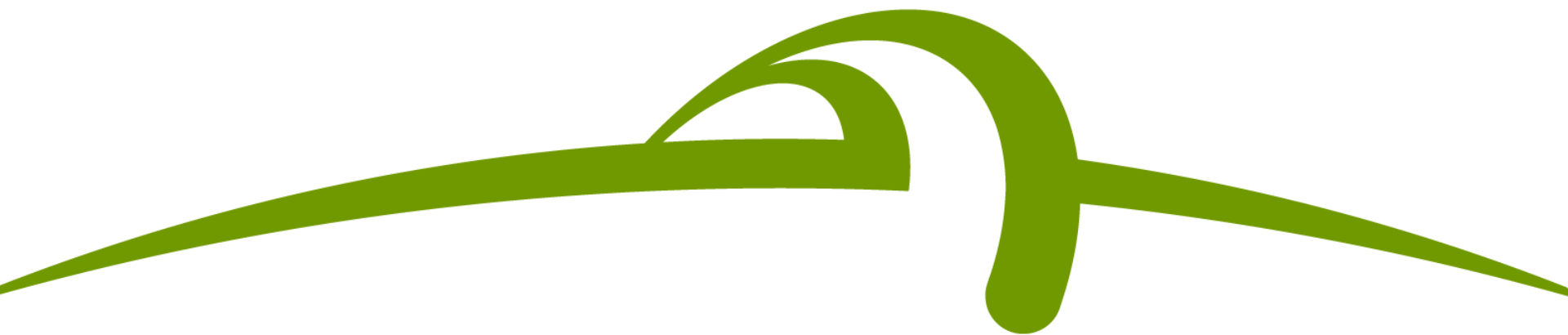
N = 129 images

Avg(East) = -0.2 m Avg(North) = -0.9 m

CE90 = 4.4 m

RMSE = 3.0 m





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